Laser Safety Guidelines

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This new Special Section will focus on laser safety issues, such as protective eye wear, risks of and protection from laser airborne contaminants, how to minimize the risk of fire, and relevant resources that provide information and certify candidates in laser safety.

I recently attended the South Beach Symposium, which was held January 14–18, 2010, in Miami Beach, Florida. During my flight home, I was reflecting on the meeting when the flight attendant came on the intercom, introduced herself, and told the passengers that the attendants were there to ensure our comfort and safety.

This made me think of an article I had recently read that stated that surgeons have embraced aspects of flight safety in the operating room by developing standard operating procedures with checklists. I understand that these lists, when followed, have reduced mistakes and resulted in fewer postoperative infections and deaths.

As these thoughts circulated in my head, I started to remember significant safety oversights that I have encountered at meetings and during my audit of laser offices and hospital departments.

I first became interested in laser safety many years ago when I attended a symposium on laser safety at the American Academy of Dermatology (AAD). Since then, I do not remember seeing another laser safety presentation at any dermatology or laser meeting I have attended over the past several years, except for the one that I initiated at a local laser update seminar.

As laser users, dermatologists study tissue/laser interactions, parameters of the equipment, and indications for their use. However, they generally spend little time learning the basics of laser safety. It is far better to prevent medical accidents than to have to try and rectify them. This, of course, applies to most aspects of life.

In the last several years, journals have published various papers on lasers igniting fires (pulsed dye lasers) and the risk of viral particles in laser-generated smoke (laryngeal papillomas), but to my knowledge, no journal has published a special section on this topic as of yet.

The American Board of Laser Surgery recently indicated that it has certified 500 clinicians. They are in the process of updating their curriculum and have invited their "fellows" to partake in the new process. Laser safety has been and will continue to be part of their curriculum.

The Royal College of Physicians of Canada is the organization that grants specialty status to Canadian physicians. It has now indicated that it will consider laser medicine as a diploma status specialty. This concept is in its infancy, but I anticipate that laser safety will form part of the core curriculum.

National Standards

In 1968, the American National Standards Institute (ANSI) approved the Safe Use of Lasers Standards Project. Prior to 1985, Z136 standards were developed by ANSI and submitted for approval and issuance as ANSI Z136 standards. The present scope of ASC Z136 standards covers protection against hazards associated with the use of lasers, laser diodes, and other optical communication systems.

The ANSI guidelines are published by the Laser Institute of America (LIA) in Orlando, Florida. These guidelines are developed by a consensus standards development process that is approved by ANSI. The LIA does not guarantee or warranty the material.

The guidelines apply to any healthcare facility where "a laser is applied to humans for diagnosis of disease, or for preventive, cosmetic, or therapeutic purposes, where

bodily structure or function is altered or symptoms are relieved." This means that hospitals as well as private offices and spas must adhere to these safety regulations.

Safety protocol implementation programs begin with laser safety officers (LSOs). LSOs are responsible for facilities' laser safety programs and have the training and experience to administer these programs. They are authorized by the administration or owners of the facility to monitor and oversee the control of laser hazards. LSOs have the authority to enforce compliance and may suspend, restrict, or terminate operation of a laser system if he or she suspects that laser hazard controls are inadequate. LSOs are mandatory in any facility that uses lasers that are classified as Class 3B or Class 4.

A Class 3B laser system may be hazardous under direct and specular reflection viewing conditions, but is normally not a diffuse reflection or fire hazard. A Class 4 laser system is a hazard to the eyes or skin from the direct beam and may pose a diffuse reflection or fire hazard and may also produce laser-generated air contaminants and hazardous plasma radiation. Plasma radiation is generated when an energetic laser beam interacts with matter, typically metals.

Those who wish to improve their knowledge of laser safety and become certified as an LSO should contact the Board of Laser Safety at 407-380-5833 or visit www.lasersafety.org to find out how to proceed. This organization can direct candidates to study material and safety conferences. It also certifies candidates by written examination. The certification period is three years and can be renewed by application after obtaining a required number of continuing education credits.

My hope for this new Special Section is that the topics I cover generate interest and feedback. I welcome responses and comments regarding this article and all future articles published in this Special Section. ●

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